MULTIMEDIA   UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

TSN 2201 / TCE2321 – COMPUTER NETWORKS
(All Sections / Groups)

15 MARCH 2018
9:00 a.m – 11:00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 printed pages including cover page with 5 questions only.

2. Attempt **FIVE** out of **FIVE** questions. All questions carry equal marks and the distribution of marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

Question 1 [10 marks]

(a) Give one difference between overall shielded twisted pair and individual shielded twisted pair.

[2 marks]

(b) How does overall shielded twisted pair and individual shielded twisted pair affect the cable performance in term of external noise and cross-talk?

[2 marks]

(c) What is the minimum number of copper wires required to inter-connect two independent circuits together so that a full duplex signal can be sent? Explain your answer.

[3 marks]

(d) Give three reasons why copper metal is used for data communication.

[3 marks]

Question 2 [10 marks]

(a) Can a blocked port exist in a Root Bridge in the Spanning Tree Protocol? If yes, please give an example and explain why if your answer is no.

[3 marks]

(b) Explain how can a bridge increases the effective bandwidth of a network.

[2 marks]

(c) Give one limitation of a switch network.

[1 mark]

(d) Give two scenarios in a network where a Root Bridge will become a Non-Root Bridge.
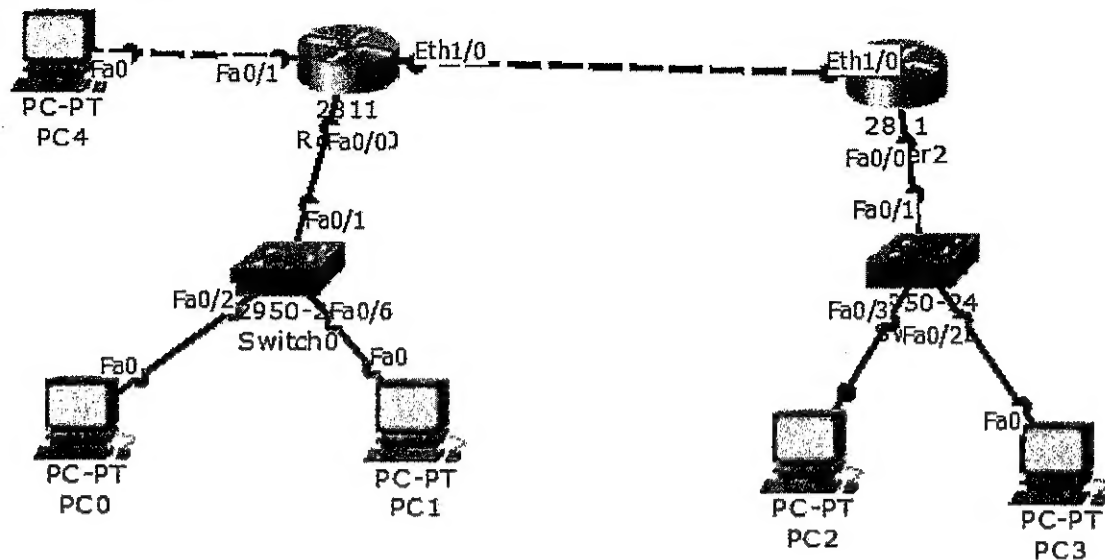
[2 marks]

(e) Give two scenarios in a network where a Non-Root Bridge will become a Root Bridge.

[2 marks]

Continue...

Question 3 [10 marks]

Consider the network below

Devices/Interface	IP address	Left Router Static route Configuration
PC0	200.1.1.1 /24	ip route-static 200.1.4.0 24 200.1.8.2
PC1	200.1.1.2 /24	
PC2	200.1.4.1 /24	
PC3	200.1.4.2 /24	
PC4	200.1.2.4 /24	
Left Router Eth1/0	200.1.8.1 /24	
Right Router Eth1/0	200.1.8.2 /24	

There is no access-list configured in the routers. Within the same network, all devices can ping each other (point to point).

(a) Scenario. Everything is working fine with exception that PC0 & PC1 cannot ping PC2 and PC3 (vice-versa). However, PC2 and PC3 can see the ping request packet from PC0 and PC1. What wrong with the router2 configuration?
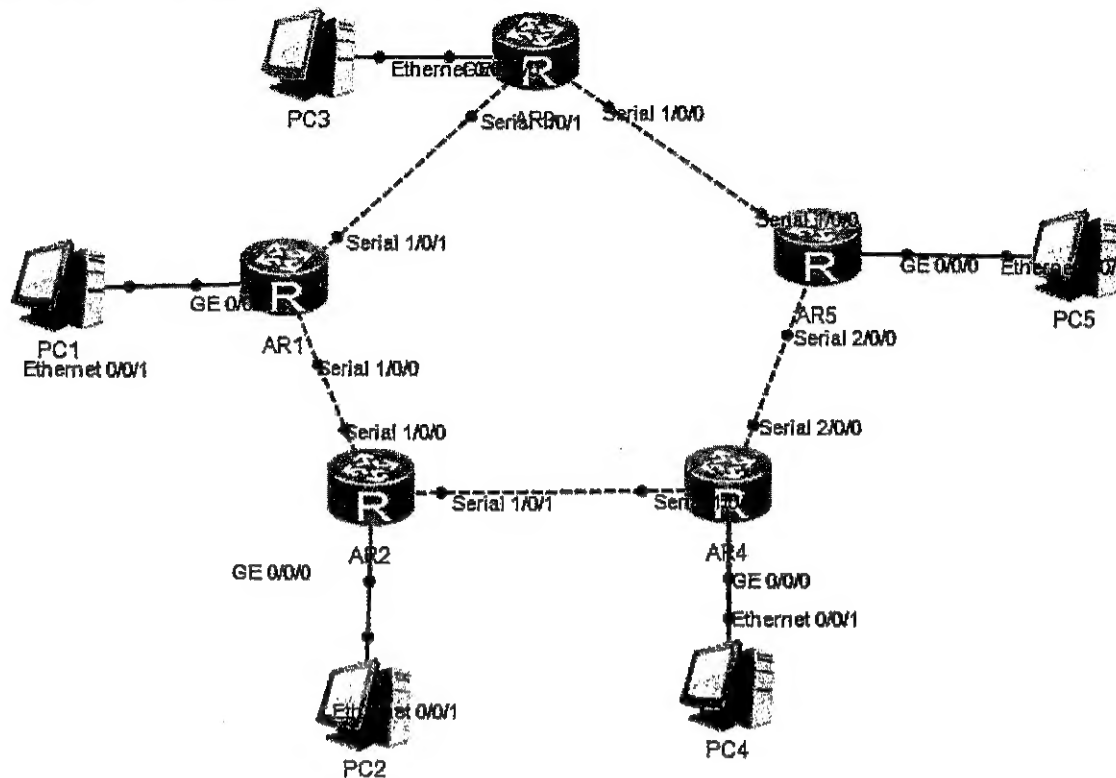
[3 marks]

(b) A ROJAK Network consists of 100 routers nation-wide. The network prefix is given by the service provider. However the network administrator of ROJAK network is free to configure the last digit of the IP address. For example, 10.0.0.X /24, the value of X is given by the network administrator. Due to lack of motivation to work, the network administrator randomly assigns the value X to each network. Each network may have a different value of X. Describe what are the possible problems while the network is running.

[3 marks]

Continue...

(c) In one of the labtest shown in the diagram below, you are asked to configure the following ip addressing 200.1.1.X for the whole network so that all devices can ping each other. Some network will have /30 network mask, some has /29 network mask. You are free to decide the value of X. This labtest is very tedious.

Later in year 2020, when I work as network engineer in Cisco System, I found out that this kind of IP addressing is not used at all even though it can save a lot of IP addresses. Instead all networks generally use a network mask of 255.255.255.0. Explain why the former addressing method is not used in production network?

Note: You can write here, your grief feeling experience while doing the lab.

[3 marks]

(d) Give one difference between BGP (Border Gateway Protocol) and RIP (Routing Information Protocol).

[1 mark]

Continue...

Question 4 [10 marks]

(a) Give one example of a hypothetical application that makes use of anycast service.

[2 marks]

(b) Give two differences between IGMP and PIM.

[2 marks]

(c) Give one reason why ISP is reluctant to provide IP Multicast services.

[2 marks]

(d) Give one reason why some ISPs are motivated to provide IP Multicast services.

[2 marks]

(e) How many packets are needed to establish a TCP connection (assuming no packet lost)? [1 mark]

(f) How many packets are needed to terminate a TCP connection (assuming no packet lost)? [1 mark]

Question 5 [10 marks]

(a) The initial RSA keys used are Alice.public, Alice.private, Bob.public and Bob.private. Nevertheless, you can generate other keys such as session key, symmetry keys from the random number generator and the existing RSA keys.

Alice needs to send many messages to BOB. These messages will pass-through Chong, Dave. Chong and Dave need to see the message clearly. There is no need for Chong and Dave to verify the message as if it's a fake message Bob will inform them. There is no need for Alice to sign these messages whatever comes from Alice is assumed to be true.

Alice & BOB have to make sure that the message is not modified by Chong or Dave.

(a) Describe the process of Alice sending the message. [2 marks]

(b) Describe the process of Bob receiving and verifying the message. [2 marks]

(c) What is the function of SNMP GetBulk in SNMP? [2 marks]

(d) What is the difference between ftp active mode and ftp passive mode? [2 marks]

(e)Describe how virtual host support in HTTPv1.1 improves the scalability of web hosting. [2 marks]

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